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# The political economy of IMF forecasts

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**Abstract** We investigate the political economy of IMF forecasts with data for 157 countries (1999–2005). Generally, we find evidence of forecast bias in growth and inflation. Specifically, we find that countries voting with the United States in the UN General Assembly receive lower inflation forecasts as domestic elections approach. Countries with large loans outstanding from the IMF also receive lower inflation forecasts, suggesting that the IMF engages in "defensive forecasting." Finally, countries with fixed exchange rate regimes receive lower inflation forecasts, suggesting the IMF desires to preserve stability as inflation can have detrimental effects under such an exchange rate regime.

**Keywords** IMF · Economic forecasts · Political influence

**JEL Classification** C23 · D72 · F33 · F34

## 1 Introduction

The IMF regularly forecasts major macroeconomic variables for many developed and developing countries. These forecasts, published biannually, are a key element in the Fund's

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multilateral surveillance activities. Surveillance is usually considered by the IMF to be its "most central and important activity" (Hacche 2007, p. 98). Indeed, with the importance of IMF conditional lending fading, IMF surveillance may take on the role that conditionality has played signaling to private investors a country's "good performance" (see Marchesi and Thomas 1999; Marchesi 2003). Given the considerable role of surveillance, it is vital that the task of forecasting be performed accurately, in other words, that IMF forecasts be unbiased and efficient.

The IMF bases its forecasts primarily on information the IMF staff gathers through consultations with member countries (e.g., see IMF 2006). There is no question that the initial projections are based on an econometric model.[1] Subsequently, however, there is much leeway for political influence and IMF self-interest to enter into discretionary adjustments.

With this in mind, we evaluate the accuracy of IMF forecasts of GDP growth and inflation using panel data for individual developing countries. We choose to consider growth and inflation forecasts because both play an important role in public discussions and are easily interpreted. In contrast to most previous studies, which employ regional data for the developing world, we use country-specific data, enabling us to test hypotheses that cannot be tested on a regional basis.

Our major contribution is to identify the characteristics of countries receiving optimistic and pessimistic forecasts. We consider the potential political and reputational motivations of the IMF. We also consider reasons arising from the specific mandate of the IMF to ensure the stability of the international monetary system.

Regarding politically strategic motivations, we consider the influence of the most powerful members of the IMF. To the extent that governments benefit from optimistic economic forecasts, the Fund's major shareholders and their allies might be more likely to receive such forecasts because of the way political power is wielded at the IMF. In comparison, countries opposed to the major shareholders are likely to receive more pessimistic forecasts.

The Fund might also have other interests in providing biased forecasts. For developing countries participating in IMF programs, for example, overly optimistic forecasts may serve to justify Fund lending. The IMF may also care about its reputation as a good manager of its resources. To put it bluntly, the Fund may engage in "defensive forecasting" because it cares about getting repaid.

Finally, forecast bias may be driven by the IMF's concern for worldwide economic stability. Since the IMF has the specific mandate of preserving the stability of the international monetary system, it might want to avoid the responsibility of being blamed for self-fulfilling prophecies. Its forecasts are thus likely to be more optimistic when economic stability is at risk.

We continue as follows. The next section discusses the previous literature, and Sect. 3 presents our hypotheses. Section 4 tests for bias and inefficiency in IMF forecasts. Section 5 describes our data and the method we use to test our hypotheses. Our results are presented in Sect. 6. A brief conclusion follows.

## 2 Literature overview

While research analyzing IMF forecasts is relatively new, there is a large and growing body of literature addressing how political and bureaucratic interests influence the lending activities of the IMF. We suspect that many of the arguments about IMF lending may also apply

[1] See IMF (1998) for a detailed description of the IMF's MULTIMOD forecasting model.

to its forecasting. Thus, we first review the literature on IMF lending before turning to the recent findings on IMF forecasting.

### 2.1 Background

We begin with political influence.[2] A member's influence at the IMF is explicitly tied to the size of its economy, and the top five shareholders at the IMF—the United States, Japan, Germany, France and the United Kingdom—essentially control major Fund decisions.[3] With about 17% of the total votes, the United States by itself has veto power over major decisions at the IMF, including the appointment of the IMF's Managing Director, which requires an 85% supermajority.

There is ample evidence that the Fund's major shareholders use their influence to pursue political objectives.[4] Thacker (1999), for example, shows that governments that vote more consistently with the United States on key issues in the United Nations General Assembly are more likely to participate in IMF programs—presumably the IMF loan acts as a reward. Stone (2002, 2004) shows that governments favored by the United States (as measured by the amount of US foreign aid disbursed to a country) receive lighter punishments for noncompliance with policy conditions under IMF programs. The recent empirical literature shows that developing countries get better treatment from the IMF when they have closer ties to the United States and other G-7 countries, as measured by their voting behavior in the UN General Assembly (Barro and Lee 2005; Vreeland 2005; Oatley and Yackee 2004; Dreher and Jensen 2007; Copelovitch 2007) and while serving on the UN Security Council (Dreher et al. 2006).[5]

Beyond political pressures, many argue that the IMF has perverse incentives to defend its lending activities. Marchesi and Sabani (2007a, 2007b), for example, argue that the Fund's concern for its reputation as a good monitor/advisor discourages it from punishing governments that fail to comply with the conditions associated with its lending programs. They find that such departures from the social optimum are more likely for countries that have a longer relationship with the Fund. Similarly, Goldsbrough et al. (2002, Table 2) show that the performance criteria for the programs of prolonged users often have an optimistic bias, especially regarding projections of real GDP growth and export growth.

It has also been argued that the IMF engages in "defensive lending," throwing good money after bad to protect outstanding loans. To avoid reporting losses on its balance sheets, the IMF may have a perverse incentive to extend new loans to borrowers with repayment difficulties to ensure that the existing loans are paid back on schedule (Ramcharan 2001, 2003).

The literature above on IMF lending introduces several hypotheses that may also apply to IMF forecasting. Just as the IMF lends to politically powerful countries, countries with long histories with the IMF, and countries already deeply in debt to the IMF, the Fund may be

[2] See Steinwand and Stone (2008) for a recent survey of political influences on the Fund.

[3] These members alone control nearly 40% of the vote share and are the only countries that automatically have seats on the IMF's 24-member Executive Board. The rest of the world vies for representation through elections and shared seats.

[4] See Fratianni and Pattison (2005) for a recent survey. See Gisselquist (1981), Loxley (1986) and Andersen et al. (2006) for anecdotal evidence.

[5] Also consider Broz and Hawes (2006), Faini and Grilli (2004), Rieffel (2003), Woods (2003). For similar evidence regarding the World Bank, see Frey et al. (1985), Frey and Schneider (1986), Weck-Hannemann and Schneider (1991) and Dreher et al. (2008).

tempted to provide such countries with biased forecasts of economic performance. Indeed, as we show below, the nascent literature on IMF forecasting confirms that some of these hypotheses are plausible.

### 2.2 Previous studies of IMF forecasts

Previous studies of IMF surveillance have used statistical tests to determine the accuracy of the forecasts published in the IMF's *World Economic Outlook* (*WEO*) (IMF various years). Among others, see Artis (1988, 1997), Barrionuevo (1993), Beach et al. (1999), Loungani (2000), Batchelor (2000), Pons (2000), Aldenhoff (2007), and Timmermann (2007). In many of these studies, the IMF forecast error is compared to that of some other national research institute expected to be more independent, such as Consensus Economics (an international economic organization in London). Whereas the Artis and Loungani studies find little difference between the IMF and Consensus prediction errors, the Batchelor study shows that the IMF's growth forecasts are biased towards optimism and that the IMF's inflation forecasts are actually less biased towards pessimism than the Consensus Economics forecasts.

Beach et al. (1999) find that IMF forecasts of GDP and inflation for major industrialized countries are actually unbiased and efficient.[6] For developing regions, however, they find that the IMF has been overly optimistic: *WEO* forecasts overestimated output and underestimated inflation. Furthermore, these authors also find that the error term increases with the amount of IMF lending a region receives. This suggests that IMF forecasts may be adjusted to support its lending activity. While this kind of "defensive forecasting" may be disappointing, the result stands to reason. IMF loans are typically tied to policy conditions. Forecasts for countries receiving IMF loans may mirror the expected outcome of the policies suggested by the IMF, and this bias would result in forecasts that are overly optimistic. A bias in the other direction would be quite strange. It would indicate that the IMF itself expects its own recommended policies to be ineffective.

In contrast to the Beach et al. (1999) study, recent evidence from Aldenhoff (2007) indicates that IMF growth forecasts are distorted for both developing and industrial regions as well. For developing countries, Aldenhoff attributes the bias to the IMF's interests in promoting promising prospects for countries participating in IMF-sponsored programs. The IMF staff may be tempted to produce optimistic predictions for the general survival and growth of its lending organization. As for industrial countries, which can use their influence at the IMF to obtain favorable outcomes, the optimistic bias is attributed to political factors: forecasts attract public attention and optimism may help incumbents win reelection. Thus, the IMF may opportunistically make overly optimistic predictions, or it may be pressured to do so by powerful member states.

Broadly consistent with this view, Timmermann (2007) finds that *WEO* forecasts of GDP growth display a tendency for systematic overprediction, and he finds a bias of the underprediction of inflation.

The literature cited above indicates that IMF forecasts suffer from bias and inefficiency. While the studies have made important contributions, most of them are limited in that they consider individual country forecasts only for the Group of Seven (G-7), relying on regional aggregates for the rest of the world (with the exception of Timmermann 2007). The broader literature on the IMF indicates, however, that specific countries may receive favorable treatment under specific conditions. Thus, we propose to analyze IMF forecasts using country-specific data.

[6] They find the same for the balance of payments on the current account.

## 3 Theoretical considerations and hypotheses

Previous literature on IMF forecasts indicates a bias towards optimism. In this section we develop hypotheses as to why specific countries may receive optimistic forecasts for growth and inflation. We employ a public choice approach to the IMF analyzing the political and economic incentives and constraints facing the organization.

What drives the IMF and to whom is the organization accountable? There are various schools of thought regarding this question. We believe each has merit and derive several hypotheses from them. According to one political economy view, the IMF is beholden to its major shareholders who use (or abuse) the IMF to pursue short-term political objectives (e.g., Thacker 1999). A related public choice perspective contends that accountability in international bureaucracies is tenuous (e.g., Vaubel 1991). A long chain of command leaves room for the IMF staff to pursue objectives that maximize their budget. Still another perspective acknowledges that the IMF is staffed by professionals who are bound by the mandate as laid out in its *Articles of Agreement* (e.g., Willett 2000).

Thus, our analysis distinguishes between three sets of explanations for optimistic forecasts: (1) politically strategic, (2) defensive forecasting, and (3) stability/mandate oriented. We consider each in turn.

### 3.1 Politically strategic hypotheses

The first set of hypotheses derive from politically strategic arguments, according to which the Fund may be pressured, either explicitly or implicitly, by the governments of the member states to make overly optimistic economic forecasts.

We suspect that governments are interested in optimistic forecasts, as economic environments perceived to be "good" may increase approval by their citizens. True, deviations from overly optimistic forecasts might harm politicians in the longer run. The public may have high expectations and see government policy as failing. Yet, as politicians are usually rather short-sighted (e.g., Lagerspetz 1999), we think it is likely that politicians do—on average—want the future economic environment to look as positive as possible.

Because the IMF depends on the support of its member governments, the staff may be tempted to produce forecasts biased in their favor. Alternatively, the staff may be directly pressured by governments. Whether and to what extent the IMF will serve the interests of governments, however, depends on the power they enjoy at the Fund, and the support they receive from other powerful members (Dreher 2004).[7] As Bird and Rowlands (2003) argue, a government's power to negotiate depends greatly on the willingness of other countries to support it. So, governments with a large share of the votes at the IMF are likely to receive beneficial treatment, as are countries closely allied with these powerful countries. Power may also depend on the size of outstanding loans a country has from the IMF. According to Gould (2003, 2006), the IMF responds to pressure from private banks, as evidenced by the fact that IMF programs include conditions that support their interests. To the extent that the private banks benefit from optimistic forecasts in a country, governments important to such institutions may receive favorable forecasts from the IMF.

Arguably, optimistic forecasts are more important at some times than at others. In election years, the benefits of positive forecasts are obvious. Vaubel (1991) contends that the

[7] We should also note that there is interplay between the Fund and national authorities as advanced economies and the largest developing countries provide a full set of projections for each *WEO* exercise while the smallest countries provide updates of key variables only.

IMF uses optimistic forecasts to please member governments facing elections. Forecasts attract public attention and may influence the way voters evaluate the policy performances of their governments: optimistic forecasts may help the incumbent to win elections. We expect, therefore, incumbents to be especially interested in optimistic forecasts prior to a national election. As Aldenhoff's (2007) time series analysis for the United States shows, over-optimism is indeed significantly more prevalent prior to elections. We expect to find a similar pattern for other countries that are important to the IMF.

Based on the politically strategic arguments, we thus expect:

**Hypothesis 1** The greater a country's direct influence at the Fund, the more optimistic the IMF's forecasts are for that country.

**Hypothesis 2** Allies of the Fund's major stakeholders receive more optimistic IMF forecasts.

**Hypothesis 3** Major IMF shareholders and their allies receive more optimistic forecasts at election time.

### 3.2 Defensive forecasting hypotheses

The foregoing set of hypotheses assumes that the IMF is accountable to its shareholders. Certainly, the organization is held accountable to an extent, but accountability is not perfect. According to the public choice approach (Vaubel 1986, 1996), principal-agent problems plague international financial institutions, leaving ample room for bureaucrats to pursue private interests in maximizing their budgets by extending and defending their lending operations.[8]

Thus, our second set of hypotheses focuses on the IMF's incentives to make optimistic forecasts in order to sustain its lending activity in developing countries and to protect its reputation as a competent international financial organization. Such motivations may lead the IMF to engage in "defensive forecasting."

The IMF may forecast optimistically hoping to defend outstanding IMF credit. This argument follows from ideas about "defensive lending," discussed above, where the Fund lends to countries so deeply in debt they may otherwise not be able to make their next scheduled repayment. The Fund may decide to extend new loans to borrowers with repayment difficulties to ensure that existing debt is serviced on schedule, in order to avoid reporting a loss in its balance sheets.

If the country does not adopt policy changes to ameliorate its economic situation, of course, rolling over the debt simply postpones the default crisis. Therefore, defensive lending cannot be explained by standard economic considerations, unless postponing default will come at a relatively lower pecuniary cost due to, for example, catalytic finance (Morris and Shin 2006) or to future debt relief programs (Ramcharan 2001, 2003).

[8] Vaubel (1996, 2006) provides evidence that both the IMF and the World Bank suffer from bureaucratic inefficiencies. He argues that the dilution of voting power, which has occurred as the memberships of the organizations have grown, has undermined the incentives of principals to check bureaucratic growth and waste. For a discussion of the long chain of principal-agent relationships at the IMF, which further exacerbate accountability problems, see Vreeland (2003, 2007).

The "career concerns" theory may explain the Fund's defensive lending.[9] Current IMF officials have a relatively short horizon within the organization, and they pursue objectives different from the institution as a whole. As with any public-sector job, opportunities for promotion and future employment in the private sector are major motivations to expend effort in the current job (Dewatripont et al. 1999). Therefore, in order to avoid some "private" cost, after a borrower's inability to pay has become public, staff officials might opt to roll over the share of debt owed to the Fund.

We then suspect the IMF may intentionally provide positive bias in its forecasting. As countries with a higher stock of IMF debt relative to the total amount of outstanding IMF credit are the most likely to receive defensive loans, we expect them to receive defensive forecasts too.

There are also other ways in which the IMF may use forecasts to defend its lending. In particular, Marchesi and Sabani (2007a, 2007b) explicitly model the political costs of the dual role played by the Fund, acting at the same time as a lender and as a monitor/advisor of economic policy. To the extent that the IMF is responsible for the bad economic performance of a country, a borrower's inability to repay may hurt the reputation of the IMF as the steward of sound economic policy. Reputational costs can be severe for the IMF. For example, the most powerful Fund members might refrain from increasing the Fund's resources if its reputation as good manager of "public resources" is damaged.

When the IMF has lent to a country that has continued to experience poor economic performance, the IMF may find its reputation in jeopardy for at least three reasons. First, the Fund may indeed have prescribed the wrong economic policies. Second, the Fund may have been incapable of detecting deviations from the prescribed policies. Third, the Fund may have been incapable of credibly threatening the interruption of financial assistance to enforce policy changes.

For all of these reasons, the IMF looks bad when it is forced to cut off a country from borrowing because of the country's poor economic performance. Failure to refinance a country—particularly countries with longer histories of borrowing from the Fund—confirm the IMF's failure as a lender and a policy monitor/advisor, since this outcome is partly caused by the past advice of the IMF. The empirical results of Marchesi and Sabani (2007b) show, indeed, that a longer history of IMF lending does increase the probability of additional IMF loan disbursements. Therefore, the desire to justify its lending activity may lead the IMF to over-optimism when engaging in surveillance. Specifically, we expect that the longer the relationship with the borrowing country, the stronger the effect on forecasting.

Based on the defensive forecasting arguments, we thus expect:

**Hypothesis 4** Countries with a higher stock of debt owed to the Fund (relative to the total amount of IMF credit) receive more optimistic IMF forecasts.

**Hypothesis 5** Countries with longer relations with the IMF receive more optimistic forecasts.

### 3.3 Stability/mandate hypotheses

The third set of hypotheses is related to the IMF's primary responsibility of overseeing the stability of the international monetary system. One basic principle of this "mandate" is

[9] While moral hazard and adverse selection represent explicit incentive schemes, implicit incentives, in the form of career concerns, play a key role in all organizations.

that the actions of the IMF certainly should not spread financial crises. This can be viewed as a goal of the organization as a whole, or it could result from career considerations of individuals on the hierarchically organized IMF staff. Since forecasts draw primarily on information the IMF staff gathers through consultations with member countries, members of the staff are directly involved in the process of forecasting. The IMF staff may thus have incentives to downplay risk so that they are not held personally responsible for spreading financial crises.[10]

Which countries are likely to receive optimistic forecasts in the pursuit of stability? Our predictions about growth and inflation depend on the specific ways in which forecasts about these variables can precipitate crises.

Regarding inflation, it is widely believed that monetary policy is mainly about expectations—particularly coordinating expectations. To the extent that a negative forecast can actually precipitate crises, the IMF may systematically tend towards optimism. An overly pessimistic forecast would lead to expectations of high inflation, unnecessarily putting excessive pressure on the exchange rate. This is particularly true for countries under a fixed exchange rate regime. Flexible exchange rates can withstand slight deviations, whereas the announcement of high inflation for a fixed currency could completely undermine its value. Since financial crises are often associated with countries under a fixed exchange rate regime, and since the expectations of high inflation would lead to pressure on the exchange rate, we expect to find more optimistic forecasts for countries with fixed exchange rates.

Overly pessimistic growth forecasts could precipitate crises in other situations. The expectation of low growth could affect debt sustainability, undermining the stability of the international monetary system. If a forecast for growth is low enough, it could provoke a stampede of creditors. This is particularly true for short-term and dollar-denominated sovereign debt. Given the correlation between financial crises and the ratio of debt to GDP (especially short-term and dollar-denominated sovereign debt) we expect a tendency of the IMF to announce more optimistic growth forecasts for countries with higher short-term debt to GDP ratios.

Based on the stability mandate forecasting arguments, we thus expect:

**Hypothesis 6** Countries with a fixed exchange rate regime have more optimistic inflation forecasts.

**Hypothesis 7** Countries with a higher (short-term) debt to GDP ratio have more optimistic growth forecasts.

In order to test the hypotheses laid out above, we employ a wide range of explanatory variables. Table 1 summarizes our hypotheses and presents the definitions and sources of our explanatory variables. Before testing our explanations of bias, however, we first explore how much overall forecast bias, if any, there is. The next section tests for the bias and efficiency of IMF forecasts.

[10] In their seminal paper on strategic information transmission, Crawford and Sobel (1982) show that when an informed agent has to send a signal based on its private information to an uninformed agent and when the two agents' objectives differ, communication is noisy. Among others, Ottaviani and Sørensen (2006) develop a theory of professional forecasters' strategic behavior.

**Table 1** Variables definition

| Hypotheses | Proxies | Variables | Source |
|---|---|---|---|
| H1: Direct influence in the Fund | "Power" | GDP | World Bank (2006a) |
| H2: Indirect influence in the Fund | Influence of private creditors | Arrears on private debt | World Bank (2006b) |
| | Country's standing with the Fund's most important shareholder (United States) | Percentage of UN General Assembly votes in line with the United States | Voeten (2004) |
| | Temporary members of the UN Security Council | Dummy for temporary UNSC membership | Dreher et al. (2006) |
| H3: More optimistic forecasts at election time | Influence of elections | Share of the year prior to elections | Dreher and Vaubel (2007) |
| | Influence of voting in line with the United States prior to elections | Interaction between the UN voting variable and the pre-election variable | |
| H4: Defensive forecasting due to the political costs of a default | Influence of a higher stock of debt owed to the Fund | IMF loan share | IMF (2006) and IMF webpage |
| H5: Defensive forecasting due to "reputational effect" | Influence of the length of the relationship with the IMF | Number of past consecutive arrangements | IMF (2006) and IMF webpage |
| H6: Influence of the IMF mandate on inflation | Influence of the IMF mandate of ensuring stability on inflation | Fixed exchange rate regime | World Bank (2006b) |
| H7: Influence of the IMF mandate on growth | Influence of the IMF mandate of ensuring stability on growth | Short-term to GDP ratio | World Bank (2006b) |

## 4 Testing for bias and efficiency

We begin our analysis by replicating the previous work on IMF economic forecasts with our data. Timmermann (2007) finds that the overprediction bias for GDP growth and the underprediction bias for inflation are stronger in the longer time horizon forecasts. We believe this is because the longer the time horizon the greater the room for discretionary forecasting. Moreover, the bias is less likely to be remembered by the public at the time of realization. Thus, we focus on one of the longer run forecasts. The *WEO* publishes four types of forecasts: spring forecasts for the current and the following year, and fall forecasts for the current and the following year. We focus on fall forecasts for the following year. Our annual data are organized in an unbalanced panel comprising a maximum of 157 developed and developing countries over the period 1999–2005.

The accuracy of a forecast is based on the properties of the forecast error. A forecast is considered to be accurate if it is unbiased and efficient.

A forecast is unbiased if its average deviation from the outcome is zero. Bias may be identified by referring to the significance of the mean forecast error, as indicated by a simple regression of the error on a constant term, testing whether it is significantly different from zero (Holden and Peel 1990).

For each country $i$ during year $t$, define $e_{it} \equiv F_{it} - R_{it}$, where $e$ represents forecast error, $F$ denotes the forecast, and $R$ denotes its respective realization. The test for biasedness is

based on the regression expressed as:

$$e_{it} = \mu + u_{it}, \tag{1}$$

with $u_{it}$ being an i.i.d. residual and where $\mu$ is a constant term. We define the mean forecast error (ME) as:

$$\text{ME} = \frac{1}{T \cdot I} \sum_{i=1}^{I} \sum_{t=1}^{T} e_{it}, \tag{2}$$

with $T$ being the number of years and $I$ the number of countries in our sample.

Forecast efficiency implies that the deviation between the outcome and the projection is not related to information available at the time the projection was made (Barrionuevo 1993; Holden and Peel 1990). This condition is tested by measuring the statistical significance of the co-movements between the deviation of the outcome of the forecast and the forecast itself (the $\beta$-test), and the co-movement between the deviation of the outcome of the forecast in the current period and that in the previous period (the $\rho$-test). We estimate $\beta$ using a least-squares regression of the forecast error on a constant term and the forecast (see (3)). We estimate $\rho$ with a regression of the current-period forecast error on a constant term and the previous period error (see (4)). Therefore, a condition for efficiency is that both $\beta$ and $\rho$ be zero.

$$e_{it} = \alpha_i + \beta_i F_{it} + u_{it}, \tag{3}$$

$$e_{it} = \gamma_i + \rho_i e_{it-1} + u_{it}, \tag{4}$$

where $e$ and $F$ denote forecast error and forecast, respectively, and $\alpha$ and $\gamma$ are constant terms (with $u_{it}$ again being an i.i.d. residual).

If $\beta$ and $\rho$ are both different from zero, the inefficiency is partly due to the way in which new information is incorporated into projected values and partly because the present errors are highly correlated with past ones (Barrionuevo 1993; Pons 2000).

Table 2 reports the results for high-income OECD countries and other countries separately, as classified by the World Bank (2006a). As can be seen from columns (1) and (2), IMF forecasts are indeed biased. In high-income OECD countries, inflation forecasts are optimistic. They are significantly biased downwards at the 1% level of significance. Specifically, the average inflation forecast in those countries is 0.24 percentage points lower than actual realizations. Compared to the average rate of inflation over this sample of countries (2.25%), this is a reduction of about 10%. The Fund's growth forecasts, in contrast, are too pessimistic for non-OECD countries, with a coefficient significant at the 5% level. The forecast is, on average, 0.36 percentage points lower as compared to realizations. Compared to the average of our sample countries (4.8%), this is a reduction of about 7.5%. We detect no bias for OECD growth forecasts or non-OECD inflation forecasts.

Turning to our tests for efficiency, column (3) shows that the previous error in estimating inflation contributes to explaining the current error both for OECD and non-OECD countries. The effect is positive and significant at the 1% level. Column (4) shows the same regarding growth forecasts for non-OECD countries. As columns (5) and (6) show, in non-OECD countries, the magnitude of the error significantly depends on the magnitude of the forecast itself, with higher forecasts implying bigger mistakes. We do not find the same for OECD countries in this case.

Our results confirm, to an extent, previous studies that show bias and inefficiency in IMF forecasts. The bias is not across all estimates. Yet, the existence of an overall bias is

**Table 2** Bias and efficiency, OLS

| | Bias | | Previous error | | Forecast | | Average realization | |
|---|---|---|---|---|---|---|---|---|
| | Inflation | Growth | Inflation | Growth | Inflation | Growth | Inflation | Growth |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| OECD countries | −0.237 | 0.147 | 0.299 | 0.122 | 0.008 | −0.070 | 2.248 | 2.581 |
| | (3.54)[a] | (1.31) | (4.08)[a] | (1.56) | (0.11) | (0.64) | | |
| Number of countries | 22 | 23 | 22 | 23 | 22 | 23 | 22 | 23 |
| Number of observations | 146 | 152 | 130 | 136 | 146 | 152 | 146 | 152 |
| Non-OECD countries | 0.248 | −0.362 | 0.458 | 0.142 | 0.319 | 0.468 | 9.339 | 4.815 |
| | (0.41) | (2.25)[b] | (10.27)[a] | (2.81)[a] | (31.81)[a] | (9.59)[a] | | |
| Number of countries | 133 | 146 | 133 | 141 | 133 | 146 | 133 | 146 |
| Number of observations | 562 | 600 | 427 | 451 | 562 | 600 | 562 | 600 |

Notes: The dependent variable in columns (1)–(6) is the forecast error (forecast minus realization); t-statistics are reported in parentheses

[a]Significant at 1%

[b]Significant at 5%

not necessary for our subsequent analysis. Even if, on average, bias is zero, it is possible that forecasts for some types of situations are systematically high, while for others they are systematically low. This is the very reason we employ country-specific data. The next section presents our strategy for testing whether bias is related to any of our previously presented hypotheses.

## 5 Method and data

We test our hypotheses by regressing the forecast error on the variables suggested above. Specifically, we test:

$$e_{it} = \alpha + \beta_1 e_{it-1} + \beta_2 HYP_{it} + \beta_3 F_{it} + \eta_i + u_{it}, \tag{5}$$

where $e_{it}$ represents the forecast error in country $i$ at year $t$, and $HYP$ is a vector containing the variables introduced above (see Table 1). Note that we also include the level of the forecast ($F$) and the lagged dependent variable, given their significance in most specifications above. Finally, $\eta_i$ are country fixed effects.[11]

A potential problem with this specification is that the within-groups estimator is biased and inconsistent in the presence of a lagged dependent variable in a short panel (Nickell 1981). Thus, as a test for robustness, we employ the system GMM estimator as suggested by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998). The dynamic panel GMM estimator exploits an assumption about the initial conditions to

[11]The Hausman test rejects a random effects specification. We also tested time dummies, but they are not jointly significant, so we do not include them.

obtain moment conditions that remain informative even for persistent data. It is considered most appropriate in the presence of endogenous regressors. Results are based on the two-step estimator implemented by Roodman (2005) in Stata, including Windmeijer's (2005) finite sample correction. We apply the Sargan–Hansen test on the validity of the instruments used (amounting to a test for the exogeneity of the covariates) and the Arellano–Bond test of second-order autocorrelation, which must be absent from the data in order for the estimator to be consistent. We treat the lagged dependent variable and the economic variables as endogenous and all other variables as predetermined. To anticipate the results, the Sargan–Hansen test and the Arellano–Bond test do not reject these specifications at conventional levels of significance.

Turning to the variables employed to test our hypotheses (the *HYP* vector), political "power" (H1) is proxied by (log) GDP, following Dreher (2004).[12] Both a country's own (direct) influence in the Fund and support by other countries arguably rise with the size of its economy. Moreover, countries with higher GDP are more important for the world economy. This variable is measured in constant 2000 US$, taken from the World Bank's (2006a) *World Development Indicators*. Ideally, we would also employ a country's "quota," the capital subscription each member holds on deposit at the IMF that directly determines its voting power. However, given that our analysis includes dummies for each country and that quotas' variability is very limited over time, we cannot use it.[13]

We test for the influence of private creditors (H2), suggested by Gould (2003, 2006), by including countries' arrears on private debt, taken from the World Bank (2006b). Sometimes governments press the IMF to lend to countries that are in arrears to them or to their banks (Dreher 2004). The Fund might want to present an optimistic forecast in order to avoid outright default.

Next, we employ two proxies for countries' standing with the Fund's most important stakeholder (H2). We follow the bulk of literature and employ data on voting coincidence in the UN General Assembly as provided by Voeten (2004). In particular, we follow Thacker (1999), coding votes in agreement with the United States as 1, votes in disagreement as 0, and abstentions or absences as 0.5. The resulting numbers are then divided by the total number of votes in each year. This results in a variable ranging from zero to one, with zero indicating total disagreement with the U.S., and one showing full agreement.

Clearly, the amount of effort a country puts into influencing others will depend on the importance of a vote. Not all votes in the General Assembly are likely to be of great importance to the United States. Focusing the analysis on a subset of votes the United States considers of particular importance might thus be superior. However, inclusion of all votes has also been defended. Wittkopf (1973) states that none of the alternatives focusing on "important" votes is preferable to the general approach. Wittkopf replicates his overall results including only those votes on which the United States and the Soviet Union disagreed, finding that

[12] Descriptive statistics are reported in the Appendix.

[13] As a proxy for power, we use GDP because overall GDP is used in the formulation of vote shares at the IMF. An alternative approach would be to use GDP per capita, although this would really be a measure of economic development, not voting power at the IMF. China and Russia, for example, have much larger vote shares than Sweden and Switzerland. Replacing GDP by GDP per capita, however, does not qualitatively change the results that we present below. It turns out that overall GDP is not a robustly significant determinant of IMF forecasts and neither is GDP per capita. While not robust, both have counterintuitive effects that are statistically significant in some specifications. We discuss these below with reference to GDP. The results with GDP per capita are available on request. Importantly, the other main findings that we present with respect to our hypotheses hold regardless of the choice between GDP and GDP per capita (they also hold when both variables are included).

the results do not differ substantially from the analysis including all votes. Similarly, he replicates the previous analysis of Russett (1967), and also finds no substantial differences between "important" votes and all votes. Moreover, while the U.S. State Department provides a classification of votes it considers of particular importance, the transmission of U.S. foreign policy preferences from the State Department to the IMF is not necessarily a direct one (Thacker 1999), as it is mainly the Treasury controlling the IMF (Kahler 1990). The State Department's preferences might thus not give a good indication as to actual lobbying efforts. We thus follow most of the recent literature and include all votes in our analysis (e.g., Dreher and Sturm 2006).

The recent work in Dreher et al. (2006) suggests an additional proxy for US and other major Fund members' interests. Their analysis shows that non-permanent members of the United Nations Security Council are more likely to receive IMF programs and fewer conditions under these programs. They attribute this to the influence of the Fund's major shareholders, bribing or rewarding temporary members of the Security Council to vote according to their interests. Consequently, we include temporary Security Council membership as an additional variable.

In testing the influence of elections for important countries (H3), we include a variable measuring the fraction of a certain year that is within 12 months prior to a national (legislative or executive) election, and include its interaction with a measure of country importance. To capture the importance of a country, we use the previously mentioned variable capturing voting in line with the United States in the UN General Assembly. Data on elections are taken from Dreher and Vaubel (2007), based on Beck et al. (1999), and have been updated employing various sources. So observations are available until 2006. The underlying idea is that the closer the elections for important countries, the stronger the bias in optimism should be.

Our first defensive forecasting hypothesis (H4) is tested by including each country's outstanding credit as a percentage of total credit outstanding under all IMF facilities (as provided by the World Bank 2006b).

For our other defensive forecasting hypothesis (H5), the duration of the Fund's relationship with a country is proxied by a variable that progressively numbers the years spent consecutively by a country under a Fund arrangement, since 1970.[14]

Our classification of exchange rate regimes (H6) follows Levy-Yeyati and Sturzenegger (2005). They provide an index of de facto exchange rates on a scale from one to five, with higher values reflecting more rigid exchange rate systems. Short-term debt relative to GDP (H7), finally, is taken from the World Bank's (2006b) Global Development Finance.

The next section reports the results.

## 6 Results

We estimate our panel for a maximum of 157 countries for the period 1999 to 2005 both by OLS with country-specific effects and with GMM.[15] Table 3 presents the results of the

[14] When the IMF program spell is interrupted this variable goes to zero and, as soon as a new program begins (after an interval of at least one year), we start counting again. See Marchesi and Sabani (2007b), Przeworski and Vreeland (2000) and Vreeland (2003).

[15] Since the hypothesis of no first-order autocorrelation is rejected by the data, we estimate a fixed effects linear models with an AR(1) disturbance.

**Table 3** Explaining the bias in INFLATION forecasts

| | HP1 OLS | HP2 OLS | HP3 OLS | HP4 OLS | ALL HP OLS | ALL HP GMM |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Forecast (t) | 1.083 | 1.109 | 1.098 | 1.102 | 1.119 | 0.140 |
| | (16.94)[a] | (16.89)[a] | (16.89)[a] | (16.70)[a] | (18.42)[a] | (2.34)[b] |
| GDP (log) | 0.068 | 0.915 | 0.895 | 0.982 | 0.378 | 0.364 |
| | (0.05) | (0.64) | (0.63) | (0.68) | (0.43) | (1.23) |
| Arrears (relative to GDP) | | −43.950 | −45.928 | −49.988 | −75.578 | 27.180 |
| | | (1.42) | (1.50) | (1.58) | (2.71)[a] | (0.66) |
| UNSC dummy | | 0.320 | 0.200 | 0.117 | 0.204 | 1.240 |
| | | (0.27) | (0.17) | (0.10) | (0.18) | (1.07) |
| Voting with United States | | −21.158 | −21.500 | −21.747 | −2.496 | −3.213 |
| | | (2.24)[b] | (2.28)[b] | (2.30)[b] | (0.27) | (0.80) |
| Pre-election period | | | 6.069 | 6.123 | 6.491 | 5.768 |
| | | | (2.18)[b] | (2.18)[b] | (2.43)[b] | (2.72)[a] |
| Voting*pre-election | | | −11.202 | −11.196 | −12.362 | −11.056 |
| | | | (1.83)[c] | (1.81)[c] | (2.15)[b] | (2.63)[a] |
| IMF loan share | | | | −32.755 | −26.847 | −33.032 |
| | | | | (0.47) | (0.42) | (3.04)[a] |
| Consecutive IMF | | | | −0.039 | 0.103 | 0.003 |
| arrangements | | | | (0.13) | (0.37) | (0.01) |
| Fixed exchange rate | | | | | −0.647 | −1.112 |
| | | | | | (1.98)[b] | (2.02)[b] |
| Lagged dependent | | | | | | −0.006 |
| variable | | | | | | (0.05) |
| Constant | −8.367 | −22.101 | −21.621 | −23.336 | −12.826 | −4.423 |
| | (0.41) | (1.01) | (1.00) | (1.06) | (0.91) | (0.68) |
| Observations | 390 | 390 | 384 | 384 | 359 | 361 |
| Number of countries | 148 | 148 | 142 | 142 | 131 | 132 |
| Arellano-Bond-Test ($p$-level) | | | | | | 0.14 |
| Sargan-Hansen Test ($p$-level) | | | | | | 1.00 |

Notes: The dependent variable is the forecast error (forecast minus realization). OLS regressions include fixed country dummies; t-statistics are reported in parentheses

[a]Significant at 1%

[b]Significant at 5%

[c]Significant at 10%

estimation of (5) for the determinants of inflation bias. Table 4 presents robustness tests. Tables 5 and 6 replicate the analysis for economic growth forecasts.

First, consider our primary findings for inflation (Table 3). Each column adds further variables testing our hypotheses, while column (5) shows the full model (estimated with OLS).

All of the models here include the forecast variable. Consistent with the results of our test for efficiency (Table 2), the forecast error rises with the forecast itself. Forecasts of higher rates of inflation are associated with greater bias.

Turning to our main variables of interest, inflation forecasts are more optimistic for countries with higher arrears on private debt, in line with our expectations. The result is significant at the 1% level when we control for other variables.

Interestingly, we find that inflation forecasts generally are more pessimistic at election time but are more optimistic for closer friends of the United States. Calculating the marginal effects of this interaction (as displayed in Fig. 1a) the results show that the marginal effect of the election variable (when it changes from zero to one) is 5.2 percentage points for countries voting at the minimum value of the UN voting variable (0.10). The interaction is significant at the 5% level (not shown in the table). At the maximum value for the UN voting variable (0.95), however, the marginal effect of the election variable is −5.3 percentage points, although this effect just fails to be significant at the 10% level ($p$-value of 0.112). As can be seen in Fig. 1b, however, the marginal effects for UN voting at the minimum and maximum of the election index fail to be significant at conventional levels (as the 90% confidence intervals include zero). As for the positive effect of the election variable itself, this is consistent with the hypothesis of the political monetary cycle (e.g., Dreher and Vaubel 2007): the IMF expects inflation to increase following elections. Apparently, however, for countries that do not vote with the United States at the UN, their expectations are too pessimistic.

Countries with fixed exchange rates also obtain better inflation forecasts, as the coefficient of the variable for a fixed exchange rate regime is negative and significant at the 1% level. This result confirms the hypothesis that the IMF is more willing to produce optimistic inflation forecasts for countries that are more exposed to the risk of financial crises due to their exchange rate regime. Note that an alternative to the stability/mandate interpretation of this result is that the IMF staff may simply place more faith in fixed exchange rate regimes than they should.[16] If a fixed exchange rate works as it should, one might expect little infla-

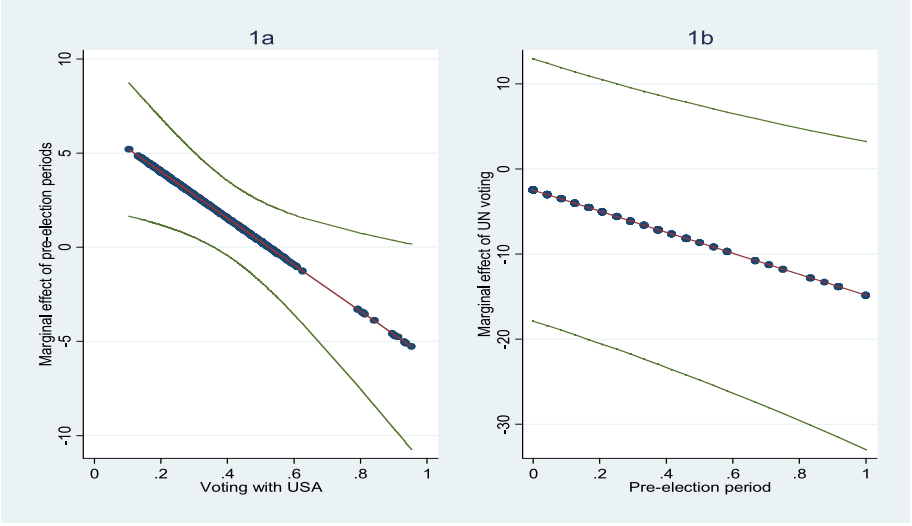


**Fig. 1** Marginal effect on the bias in INFLATION forecasts, Table 3, column (5). The graph depicts 90% confidence intervals

[16] We are grateful to Frances Rosenbluth for this suggestion.

tion. Due to the large-n nature of this study, we cannot know if the IMF staff intentionally manipulates the inflation forecasts of countries with fixed exchange rates to help avert crisis, or whether they genuinely expect such regimes to have lower inflation. Either way, such regimes experience a systematic bias. Specifically, a one point increase in the (five-point) exchange rate indicator reduces the inflation forecast by 0.65 percentage points.

In contrast to our expectations, the size of a country's economy (measured by GDP) and temporary membership in the UN Security Council do not matter for the forecast bias. In addition, all IMF-related variables are completely insignificant. Neither the amount of debt owed to the Fund (relative to the total amount of Fund credit) nor the number of years spent consecutively under an IMF arrangement affect the forecast bias.

In column (6) of Table 3 we replicate the analysis employing the consistent GMM estimator. Note that the Sargan and Arellano–Bond tests do not reject the specification at conventional levels of significance. As can be seen, the lagged dependent variable fails to be significant at conventional levels, supporting the validity of our previous OLS estimates. The OLS results displayed in column (5) are generally confirmed—with two exceptions. The coefficient for the amount of arrears on private debt is not significant, and inflation forecasts are significantly lower for countries with a greater shares of the IMF loan portfolio. Arguably, the latter finding provides evidence that the IMF cares about its reputation as a good resource manager. To avoid the appearance of financing poorly performing countries, it is tempted to provide overly optimistic projections to justify its lending activity.

To more clearly demonstrate the interaction effects, Fig. 2 shows the marginal effects of UN voting and, respectively, pre-election periods. As can be seen in Fig. 2a, countries voting against the United States in the UN General Assembly receive significantly higher inflation forecasts at election time. Countries that side with the United States, however, receive lower forecasts as elections approach. The finding is significant at the 0.10 level. If favorable inflation forecasts help win elections, it pays to be a friend of the United States. Contrary to the OLS estimates discussed above, Fig. 2b shows that in pre-election periods countries get a significant discount on their forecast when they vote in line with the United States. Our result is consistent with the idea that the IMF may be tempted to produce forecasts biased in favor of "friends" of its major shareholder and treat countries that are not friends of the United States unfavorably.

Table 4 tests the robustness of these results. We replicate the analysis—with both OLS and GMM—excluding high-income OECD countries from our sample (columns (1) and (2)) and separating countries with high and low country risk ratings, as produced by Institutional Investor (columns (3)–(6)).[17] The rationale for these robustness tests rests in the way forecasts are made. To some extent, the IMF's economic forecasts are the result of an interaction between those responsible for compiling the forecasts at the IMF and members of the various area departments who frequently have access to official national forecasts for the countries under investigation (Kenen and Schwartz 1986). Excluding high-income OECD countries might be important, as interactions between IMF staff members and country officials might be different in these countries as compared to the rest of the sample.[18] Arguing along similar lines, we would also expect interactions between staff and country officials to be different in countries with high as compared to low credit risk.

As can be seen from the table, excluding high-income OECD countries does not affect the results (Table 4, columns (1) and (2)). However, some differences arise when we exclude

[17] Institutional Investor publishes a rating specifically for "country credit" (essentially, sovereign risk). We thank Carmen Reinhart for providing these data (as used in Reinhart et al. 2003).

[18] We do not report separate results for OECD countries due to the small number of observations.

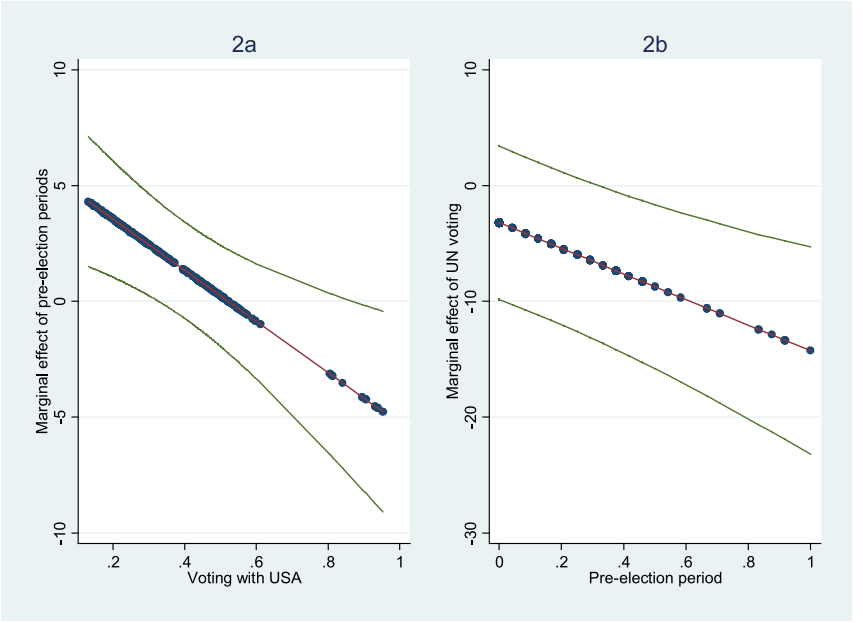


**Fig. 2** Marginal effect on the bias in INFLATION forecasts, Table 3, column (6). The graph depicts 90% confidence intervals

the countries in the top four percentiles of the country-risk ratings. We choose this cut-off as it splits the sample approximately in half.[19]

According to the OLS estimates in column (3), we find that the IMF loan share is significant at conventional levels and with the expected sign. Surprisingly, the fixed exchange rate regime is not significant any more, but, consistent with H1, we find higher GDP induces more optimistic inflation forecasts. In the GMM specification most of the results are consistent with those previously obtained but with some differences: the lagged dependent variable is now significant and, surprisingly, both higher GDP and being a temporary UNSC member induce less optimistic inflation forecasts.

Finally, where we strongly reduce our sample in order to include only countries with high-risk ratings (last two columns), we obtain coefficients that are significant only with the GMM specification. As before, we find that inflation forecasts are more optimistic for countries voting in line with the United States at election times (where the pre-election index is still positive and significant) and for countries with fixed exchange rate regimes. For obvious reasons, the share of a country's debt in the IMF loan portfolio is not significant here. With riskier countries, the IMF needs to be cautious.

Turning to our estimates of growth forecast bias, Table 5, column (4), presents the OLS estimates for the full model. As can be seen, the forecast error is positively related to the forecast itself. Most of our hypotheses, however, receive no support. The only hypothesis that is not rejected by the data is H2: countries voting in line with the United States obtain more optimistic forecasts. None of the other variables are significant, with the exception of the variable indicating the number of years consecutively spent under an IMF program; but

[19] In the OLS model sample. Note that—due to the inclusion of an AR(1) term—we loose a substantial number of observations in the OLS regressions as compared to the GMM specification.

**Table 4** Explaining the bias in INFLATION forecasts (tests for robustness)

| | w/o OECD countries OLS | w/o OECD countries GMM | w/o high risk OLS | w/o high risk GMM | w/o low risk OLS | w/o low risk GMM |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Forecast (t) | 1.125 | 0.109 | 1.380 | 0.812 | 1.376 | 0.153 |
| | (14.87)[a] | (1.44) | (21.84)[a] | (3.60)[a] | (9.99)[a] | (2.64)[a] |
| GDP (log) | 0.328 | 0.513 | 41.887 | 0.948 | −0.118 | 1.120 |
| | (0.30) | (0.60) | (3.54)[a] | (2.36)[b] | (0.18) | (1.17) |
| Arrears (relative to GDP) | −74.665 | 34.875 | −363.031 | 92.380 | 26.509 | 54.782 |
| | (2.15)[b] | (0.54) | (4.76)[a] | (1.61) | (0.96) | (0.91) |
| UNSC dummy | 0.219 | 2.652 | −0.222 | 1.388 | 1.261 | 2.291 |
| | (0.13) | (1.28) | (0.21) | (1.86)[c] | (0.32) | (0.78) |
| Voting with United States | −5.486 | −6.166 | −16.046 | 0.877 | −11.540 | −5.312 |
| | (0.39) | (1.37) | (1.01) | (0.18) | (1.17) | (0.76) |
| Pre-election period | 12.920 | 11.426 | 8.425 | 8.537 | −9.909 | 10.654 |
| | (2.52)[b] | (2.63)[a] | (3.61)[a] | (2.73)[a] | (1.10) | (2.30)[b] |
| Voting*pre-election | −33.482 | −27.549 | −15.875 | −14.880 | 20.644 | −19.036 |
| | (2.19)[b] | (1.91)[c] | (3.11)[a] | (2.08)[b] | (0.94) | (2.28)[b] |
| IMF loan share | −13.010 | −42.204 | −124.705 | −63.519 | −674.900 | −4.086 |
| | (0.16) | (2.24)[b] | (1.79)[c] | (3.42)[a] | (0.46) | (0.15) |
| Consecutive IMF arrangements | 0.153 | 0.150 | 0.589 | 0.050 | −0.072 | 0.212 |
| | (0.44) | (0.95) | (1.12) | (0.17) | (0.29) | (1.20) |
| Fixed exchange rate | −0.744 | −2.766 | −0.512 | −0.804 | 0.054 | −1.082 |
| | (1.80)[c] | (1.98)[b] | (1.28) | (2.02)[b] | (0.13) | (1.71)[c] |
| Lagged dependent variable | | −0.024 | | 0.568 | | −0.033 |
| | | (0.22) | | (2.39)[b] | | (0.33) |
| Constant | −12.582 | −1.447 | −1,077.016 | −25.439 | −1.054 | −21.543 |
| | (0.74) | (0.07) | (6.80)[a] | (2.61)[a] | (0.09) | (1.07) |
| Observations | 257 | 259 | 169 | 171 | 113 | 190 |
| Number of countries | 109 | 110 | 53 | 54 | 54 | 131 |
| Arellano–Bond Test ($p$-level) | | 0.09 | | 0.53 | | 0.98 |
| Sargan–Hansen Test ($p$-level) | | 0.45 | | 0.98 | | 0.90 |

Notes: The dependent variable is the forecast error (forecast minus realization). OLS regressions include fixed country dummies; t-statistics are reported in parentheses

[a]Significant at 1%

[b]Significant at 5%

[c]Significant at 10%

the coefficient has the "wrong" sign: countries with longer histories with the IMF receive overly pessimistic growth forecasts. While there is plenty of evidence that IMF programs are bad for economic growth,[20] it seems that even the IMF itself is too pessimistic for countries with a long history of IMF arrangements.

[20]See Dreher (2006) and Vreeland (2007) for a review.

**Table 5** Explaining the bias in GROWTH forecasts

| | HP1 OLS | HP2 OLS | HP3 OLS | HP4 OLS | ALL HP OLS | ALL HP GMM |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Forecast (t) | 0.802 | 0.792 | 0.800 | 0.741 | 0.763 | 0.008 |
| | (4.18)[a] | (4.20)[a] | (4.18)[a] | (3.87)[a] | (3.98)[a] | (0.03) |
| GDP (log) | −2.085 | −1.465 | −1.425 | −1.378 | −1.262 | −0.092 |
| | (2.23)[b] | (1.59) | (1.56) | (1.44) | (1.28) | (0.51) |
| Arrears (relative to GDP) | | −7.449 | −7.700 | −8.776 | −4.744 | −33.970 |
| | | (0.41) | (0.42) | (0.47) | (0.25) | (0.83) |
| UNSC dummy | | −0.538 | −0.549 | −0.547 | −0.557 | −0.410 |
| | | (0.75) | (0.76) | (0.77) | (0.79) | (1.12) |
| Voting with United States | | 21.566 | 21.464 | 20.496 | 20.521 | 2.243 |
| | | (4.13)[a] | (4.07)[a] | (3.93)[a] | (3.96)[a] | (1.65)[c] |
| Pre-election period | | | 0.743 | 0.576 | 0.578 | 1.208 |
| | | | (0.42) | (0.32) | (0.33) | (0.83) |
| Voting*pre-election | | | −1.471 | −0.964 | −1.176 | −1.212 |
| | | | (0.37) | (0.24) | (0.30) | (0.46) |
| IMF loan share | | | | −2.714 | −5.891 | 4.483 |
| | | | | (0.12) | (0.26) | (1.00) |
| Consecutive IMF arrangements | | | | −0.428 | −0.474 | 0.006 |
| | | | | (2.40)[b] | (2.62)[a] | (0.13) |
| Short-term debt | | | | | −14.531 | −4.470 |
| | | | | | (1.39) | (1.30) |
| Lagged dependent variable | | | | | | 0.346 |
| | | | | | | (2.98)[a] |
| Constant | 47.464 | 25.213 | 24.277 | 24.375 | 22.275 | 1.485 |
| | (2.42)[b] | (1.30) | (1.27) | (1.20) | (1.05) | (0.32) |
| Observations | 414 | 414 | 408 | 408 | 408 | 406 |
| Number of countries | 157 | 157 | 151 | 151 | 151 | 151 |
| Arellano–Bond Test ($p$-level) | | | | | | 0.85 |
| Sargan–Hansen Test ($p$-level) | | | | | | 0.67 |

Notes: The dependent variable is the forecast error (forecast minus realization). OLS regressions include fixed country dummies; t-statistics are reported in parentheses

[a]Significant at 1%

[b]Significant at 5%

[c]Significant at 10%

In the GMM specification (last column of Table 5) the only variable that is significant with the expected sign is voting in line with the United States. This confirms again our hypothesis that friends of the IMF's most important shareholder do obtain more optimistic growth forecasts. The result is robust to the exclusion of high-income OECD countries (first column in Table 6) and, consistently, to the exclusion of low-risk countries (column (5), Table 6). Quite surprisingly, however, the coefficient on UN voting becomes significantly negative once countries with high-risk ratings are excluded

**Table 6** Explaining the bias in GROWTH forecasts (tests for robustness)

| | w/o OECD countries OLS | w/o OECD countries GMM | w/o high risk OLS | w/o high risk GMM | w/o low risk OLS | w/o low risk GMM |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Forecast (t) | 0.788 | −0.001 | 1.763 | 0.344 | 0.901 | −0.256 |
| | (3.14)[a] | (0.00) | (8.11)[a] | (0.97) | (2.15)[b] | (0.58) |
| GDP (log) | −1.202 | −0.111 | −38.377 | −0.044 | 0.253 | 0.673 |
| | (0.95) | (0.42) | (7.12)[a] | (0.09) | (0.33) | (2.18)[b] |
| Arrears (relative to GDP) | −8.432 | −32.330 | −98.690 | −67.265 | −9.382 | −5.941 |
| | (0.38) | (0.83) | (3.01)[a] | (1.78)[c] | (0.44) | (0.14) |
| UNSC dummy | −0.247 | −0.243 | −0.561 | −0.789 | 3.604 | −0.042 |
| | (0.24) | (0.41) | (0.78) | (1.38) | (1.23) | (0.03) |
| Voting with United States | 25.573 | 1.570 | −32.289 | 3.312 | 10.323 | 0.107 |
| | (3.73)[a] | (0.82) | (3.35)[a] | (1.07) | (1.70)[c] | (0.04) |
| Pre-election period | −1.631 | −0.976 | 1.815 | −0.021 | −12.883 | −1.595 |
| | (0.48) | (0.37) | (1.06) | (0.01) | (2.43)[b] | (0.68) |
| Voting*pre-election | 5.996 | 6.131 | −7.119 | −1.217 | 34.469 | 1.849 |
| | (0.56) | (0.72) | (1.82)[c] | (0.45) | (2.49)[b] | (0.29) |
| IMF loan share | −7.147 | 5.482 | −21.993 | 7.051 | 995.463 | −23.816 |
| | (0.27) | (0.82) | (1.15) | (1.29) | (1.16) | (2.66)[a] |
| Consecutive IMF arrangements | −0.469 | −0.005 | 0.151 | −0.007 | −0.339 | 0.150 |
| | (2.21)[b] | (0.09) | (0.41) | (0.03) | (1.77)[c] | (1.76)[c] |
| Short-term debt | −13.804 | −3.841 | 2.651 | 8.819 | −10.442 | −0.720 |
| | (1.12) | (1.05) | (0.12) | (0.42) | (1.02) | (0.26) |
| Lagged dependent variable | | 0.354 | | 0.170 | | 0.261 |
| | | (3.17)[a] | | (0.86) | | (1.55) |
| Constant | 19.480 | 2.065 | 995.474 | −0.720 | −14.721 | −15.464 |
| | (0.73) | (0.34) | (7.72)[a] | (0.05) | (0.96) | (1.94)[c] |
| Observations | 302 | 300 | 192 | 193 | 133 | 213 |
| Number of countries | 128 | 128 | 60 | 61 | 67 | 149 |
| Arellano–Bond Test ($p$-level) | | 1.00 | | 0.99 | | 0.80 |
| Sargan–Hansen Test ($p$-level) | | 0.36 | | 0.75 | | 0.48 |

Notes: The dependent variable is the forecast error (forecast minus realization). OLS regressions include fixed country dummies; t-statistics are reported in parentheses

[a]Significant at 1%

[b]Significant at 5%

[c]Significant at 10%

(column (3), Table 6). Overall, therefore, our hypotheses clearly find less support for growth, as compared to inflation forecasts. As possible explanation, growth forecasts might be more widely debated than inflation forecasts, requiring the IMF to be more cautious.

We conclude this section by presenting some of the interesting but somewhat complex effects of politics with some examples from the data.[21] Table 7 elaborates on the interactive effect of elections and alliance with the United States on forecast bias for inflation. Here, we rely on the conservative GMM estimates (Table 3, column (6)). Consider France, which voted with the United States in 2001 at a relatively high rate (0.54). That year, actual inflation in France was 1.8%. But with elections on the horizon during the preceding year, the IMF underpredicted inflation by 0.7%. Note that this is a substantial error, representing 39% of the realized value. Our prediction is in the right direction for this case:[22] −1.8%. We similarly predict forecast bias of −1.8% for other friends of the United States, Poland and Romania. Both had voting records similar to that of the United States in 2000 and had elections on the horizon. For countries that were less friendly to the United States, such as Argentina, our model predicts a forecast bias in the other direction. With elections on the horizon, we expect the IMF to over-inflate the inflation forecast by 0.4%, although in this case the IMF actually did much worse, overpredicting by 34.6%. A more typical case is Kenya, whose voting correlation was 0.21. With elections on the horizon, we expect the bias to be 2.7%. In fact, the IMF was off by three percent. Considering that inflation was actually just two percent that year, this was a substantively important bias.

Table 7 also lists some cases of the more straightforward effect of voting in line with the United States for growth forecasts. We did not find the interaction with elections to be significant, so the interpretation with being close to the United States is straightforward: the closer to the United States, the greater the growth forecast bias. Some interesting cases include powerful G7 countries, such as Germany, France, Canada, and Italy, as well as faithful and strong allies, such as Denmark, Portugal, Poland, Albania, and Uzbekistan. At the other end of the spectrum are countries like Bolivia, Venezuela, and Iran. In between, are countries like Ireland and Guatemala. For a typical middle country, like Guatemala in 2001, whose voting correlation with the United States is 0.33, our model expects overprediction of growth by 0.7%. In fact, the IMF did overpredict growth by just that. The error is substantial; considering that actual growth was 2.3% that year, the bias represents 30% of the realized value.

Due to the large-$N$ nature of our statistical study, we cannot know if any of the cases presented in Table 7 represent actual instances where intentional adjustment of the forecast took place. Case study analysis—and insider knowledge—would be necessary to establish such a claim. From casual conversations from insiders at the IMF, we do know that adjustments take place. The question is whether this activity leads to systematic forecast bias. No estimation approach should be expected to perform perfectly. Many of the cases in the data certainly represent errors resulting directly from the econometric model used by the IMF to forecast, as well as honest mistakes in adjusting the initial model results. We should point out that there also are cases in the data that our forecast bias model does not predict well. We predict positive bias in favor of the United Kingdom, for example, but find little evidence

[21] For excellent discussions of understanding interaction terms, see Brambor et al. (2005) and Clark et al. (2006).

[22] Note that we do not adjust for any of the other control variables in the specification. Because we are focusing on the impact of the interacted variables (Voting with United States and Pre-election period), we report only their contribution to the expected forecast bias. Following the notation from equation 5, we report the impact of "Voting" and "Election" for the case of France, 2001:

$$\beta_{\text{Voting}} Voting_{\text{France},2001} + \beta_{\text{Election}} Election_{\text{France},2001} + \beta_{\text{Interaction}} Voting \cdot Election_{\text{France},2001}.$$

Of course other variables impacted this case, but the purpose of this exercise is to focus on the interaction of these particular variables; so we have effectively set all other variables to zero for presentation purposes in Table 7.

**Table 7** Impact of UN voting and elections, selected countries, 2005

| Inflation: The predicted impact of UN voting and elections | | | | | | |
|---|---|---|---|---|---|---|
| Country | Year | Voting with United States | Portion of prior year preceding elections | Actual inflation | Actual forecast error | Predicted impact of voting and elections |
| *Favorable bias* | | | | | | |
| Poland | 2000 | 0.54 | 0.54 | 10.1 | −4.6 | −1.8 |
| France | 2001 | 0.54 | 0.58 | 1.8 | −0.7 | −1.8 |
| Romania | 2000 | 0.53 | 0.92 | 45.7 | −28.9 | −1.8 |
| Moldova | 2000 | 0.52 | 0.75 | 31.3 | −25.4 | −1.7 |
| Bulgaria | 2001 | 0.49 | 0.71 | 7.5 | −3.0 | −1.4 |
| *Unfavorable bias* | | | | | | |
| Peru | 2000 | 0.38 | 1.00 | 3.8 | 1.5 | 0.3 |
| Argentina | 2003 | 0.32 | 0.67 | 13.4 | 34.6 | 0.4 |
| Sudan | 2000 | 0.29 | 1.00 | 8.0 | 1.0 | 1.6 |
| Armenia | 2002 | 0.29 | 0.71 | 1.1 | 1.9 | 0.9 |
| Columbia | 2001 | 0.25 | 0.67 | 8.0 | 0.8 | 1.2 |
| Panama | 2003 | 0.23 | 0.58 | 0.6 | 1.0 | 1.1 |
| Nigeria | 2002 | 0.22 | 0.67 | 13.7 | 3.4 | 1.5 |
| Kenya | 2002 | 0.21 | 1.00 | 2.0 | 3.0 | 2.7 |
| Growth: The predicted impact of UN voting | | | | | | |
| Country | Year | Voting with United States | | Actual growth | Actual forecast error | Predicted impact of voting |
| *High bias* | | | | | | |
| France | 2003 | 0.52 | | 0.9 | 1.4 | 1.2 |
| Germany | 2003 | 0.51 | | −0.2 | 2.2 | 1.2 |
| Albania | 2003 | 0.51 | | 5.7 | 1.3 | 1.1 |
| Canada | 2003 | 0.50 | | 2 | 1.4 | 1.1 |
| Denmark | 2003 | 0.48 | | 0.7 | 1.5 | 1.1 |
| Portugal | 2003 | 0.48 | | −1.1 | 2.6 | 1.1 |
| Italy | 2002 | 0.47 | | 0.3 | 1.7 | 1.1 |
| Poland | 2002 | 0.47 | | 1.4 | 2.3 | 1.0 |
| Uzbekistan | 2003 | 0.46 | | 1.5 | 1.5 | 1.0 |
| *Medium bias* | | | | | | |
| Ireland | 2003 | 0.43 | | 4.4 | 0.9 | 1.0 |
| Guatemala | 2001 | 0.33 | | 2.3 | 0.7 | 0.7 |
| Malawi | 2003 | 0.29 | | 3.9 | 0.6 | 0.7 |
| *Low bias* | | | | | | |
| Bolivia | 2003 | 0.24 | | 2.8 | −0.3 | 0.5 |
| Brazil | 2004 | 0.20 | | 4.9 | −1.9 | 0.5 |
| China | 2003 | 0.19 | | 10 | −2.8 | 0.4 |
| Iran | 2003 | 0.19 | | 6.7 | −1.2 | 0.4 |
| Guyana | 2004 | 0.17 | | 1.6 | 0.4 | 0.4 |
| Venezuela | 2004 | 0.14 | | 17.9 | −10.2 | 0.3 |

Note: Estimates for inflation (growth) are based on column (6) of Table 3 (Table 5). The predicted forecast bias shows our predictions of the change in the IMF's ex ante forecasts due to a country's UN voting pattern

of such bias in the data. Errors of positive and negative bias should, however, cancel out in the aggregate. When it comes to IMF forecasting they do not. Like the studies before ours, we detect systematic bias in IMF forecasting. And when we regress forecast error on the characteristics of specific countries, we find evidence supporting the hypotheses of political influence, defensive forecasting, and adjusting for the IMF mandate of global economic stability. We should not find such evidence unless people on either the staff or the Executive Board (or both) systematically deviate from the econometric forecasting model.

## 7 Conclusion

Following the East Asian financial crisis in the late 1990s, calls came from across the political spectrum for the IMF to get out of the lending business. The calls were heard. These days lending is way down at the IMF. Emerging market countries are finding alternatives to IMF loans that are not conditioned on the Fund's recommended policy reforms. The IMF finds itself tightening its belt as the revenue it has generated in the past from lending is beginning to dry up. Like many times in its past, the IMF is looking for a new primary purpose from among the various functions laid out in the *Articles of Agreement*.

The IMF's new *raison d'etre* appears to be surveillance. Already accounting for the largest part of its budgetary resources, Managing Director Rodrigo de Rato announced in 2006 that the IMF would explore "new directions in surveillance," including strengthening the analysis presented in the *WEO*:

> The difficulties in tackling unprecedented global imbalances and the challenges facing individual countries underscore the need for stronger exercise of the Fund's policy analysis and advice to its member countries, a process known as surveillance.[23]

Past lending activities of the IMF have been plagued by political problems, both international and domestic. These problems contributed to the disappointing results that prompted calls for the IMF to cut back its lending activities. As the IMF shifts focus from "lender" to "monitor," it is important to ask whether political problems will still plague its activities.

Using panel data for a maximum of 157 countries over the period 1999–2005, we have investigated empirically the politics involved in IMF economic forecasts. We find a systematic bias in growth and inflation forecasts. Our results indicate that countries voting in line with the United States in the UN General Assembly receive better inflation and—depending on the sample of countries included in the analysis—growth forecasts. As the United States is the Fund's major shareholder this result supports the hypothesis that the Fund's forecasts are not based purely on economic considerations. Our results also confirm the defensive forecasting hypothesis: inflation forecasts are systematically biased downwards for countries more heavily indebted to the IMF.

What policy conclusions can be drawn from these results? As for reforming the Fund, we should be cautious. As argued in Dreher et al. (2006, 2008), it may be that the very prospect of manipulating the Fund for political goals is a necessary condition for its major shareholders to lend their financial support to the international institution. So, perhaps the political manipulation of international institutions is an evil necessary to engage the participation of powerful countries in international cooperation. Even if non-politically motivated institutions might be preferable to politically motivated ones, this may not be a realistic alternative.

[23]The IMF "Medium Term Strategy": http://www.imf.org/external/np/exr/ib/2006/041806.htm (accessed 9 September 2007). See Vreeland (2006) for a discussion.

The alternative to a world with politically manipulated international institutions may simply be a world without international institutions. One must therefore weigh the costs of political manipulation against the benefits of having various institutions that facilitate multilateral deliberations.

With the above caveats in mind, our suggestions for reform are conservative. We do believe that there is room for improvement, to the extent that long-run economic gains matter more than short-run political gains. Perhaps much like central banks are isolated from the vagaries of day-to-day politics, the Fund can be reformed to provide the country-appointed executive directors with a little more independence from political pressures and still provide the major shareholders with strong enough voices to maintain their support of the institution. For example, the Fund's directors could be appointed for long, non-renewable terms during which they could represent the long-run interests of their respective countries.

If the IMF is to remain relevant by increasing its surveillance endeavors, Fund forecasts must be free from political and opportunistic bias. Economic agents might have rational expectations, and if the Fund provides forecasts that are systematically biased, its credibility is going to be seriously damaged. As surveillance becomes the central focus of IMF activity, if the Fund wants to be credible, it should also make sure that the evaluation of forecasts becomes a central part of the research agenda of the international institution. The importance of forecasting requires scholars of the IMF to investigate whether and to what extent IMF surveillance is laden with political and self-serving interests.

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## Appendix: Descriptive statistics (estimation sample Table 3, column (5))

| Variable | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|
| Bias, inflation | 0.14 | 11.09 | −59.90 | 157.20 |
| Bias, growth | −0.32 | 3.14 | −22.20 | 13.50 |
| Forecast, inflation | 8.11 | 32.88 | −2.20 | 522.20 |
| Forecast, growth | 4.05 | 2.53 | −4.50 | 42.70 |
| GDP (log) | 24.18 | 2.27 | 19.12 | 30.01 |
| Arrears (relative to GDP) | 0.00 | 0.02 | 0.00 | 0.18 |
| UNSC dummy | 0.08 | 0.27 | 0.00 | 1.00 |
| Pre-election period | 0.12 | 0.21 | 0.00 | 1.00 |
| Voting with United States at the UNGA | 0.35 | 0.15 | 0.10 | 0.95 |

| Variable | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|
| IMF loan share | 0.01 | 0.03 | 0.00 | 0.27 |
| Consecutive IMF arrangements | 1.68 | 3.09 | 0.00 | 15.00 |
| Fixed exchange rate | 3.72 | 1.41 | 1.00 | 5.00 |
| Short-term debt (relative to GDP) | 0.05 | 0.08 | 0.00 | 0.56 |

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